

IN THE CLAIMS

* 1. (Amended) In a plasma processing chamber, a method for improving etch uniformity while etching a semiconductor substrate, comprising:

placing said semiconductor substrate into a sacrificial substrate holder, said sacrificial substrate holder being configured to present a sacrificial etch portion surrounding said semiconductor substrate to a plasma within said plasma processing chamber to permit said plasma to etch a first surface of said semiconductor substrate and a first surface of said sacrificial etch portion simultaneously, said first surface of said sacrificial etch portion being formed of a material capable of being etched by said plasma and configured to be parallel with said first surface of said semiconductor substrate;

positioning said semiconductor substrate and said sacrificial substrate holder into said plasma processing chamber;

striking said plasma from an etchant source gas released into said plasma processing chamber; and

simultaneously etching said first surface of said semiconductor substrate and said first surface of said sacrificial etch portion using said plasma.

2. The method of claim 1 wherein said semiconductor substrate represents a wafer and wherein said sacrificial etch portion represents a ring surrounding said wafer.

3. The method of claim 1 wherein said sacrificial substrate holder is a concentric ring surrounding said substrate, a second surface of semiconductor substrate being in direct contact with a chuck of said plasma processing chamber.

4. The method of claim 1 wherein said etching is a metallization etch, said material comprising aluminum.

5. The method of claim 4 wherein said etchant source gas includes chlorine.

6. The method of claim 5 wherein said plasma processing chamber represents an inductively coupled plasma processing chamber.

7. The method of claim 1 wherein said semiconductor substrate represents a substrate for fabricating integrated circuits (IC's).

8. The method of claim 1 wherein said plasma processing chamber represents an inductively coupled plasma processing chamber.

9. The method of claim 1 wherein said plasma processing chamber represents a transformer coupled plasma processing chamber.

10. The method of claim 1 wherein said material is selected to form substantially volatile byproducts when etched by said plasma within said plasma processing chamber.

* 25 11. (New) In a plasma processing chamber, a method for improving etch uniformity while etching a semiconductor substrate, comprising:
providing an annular sacrificial substrate holder having a planar upper surface;
placing a semiconductor substrate within said sacrificial substrate holder such that an upper surface of said semiconductor substrate is substantially even with said planar upper surface of said annular sacrificial substrate holder;

creating a plasma etching cloud from an etchant source gas released into said plasma processing chamber to simultaneously etch said upper surface of said semiconductor substrate and upper planar surface of said sacrificial etch portion, wherein said sacrificial substrate holder is dimensioned such that said plasma etching cloud extends beyond an outer periphery of said sacrificial substrate holder during said etching.

* 26. (New) The method of claim 11 wherein said etching is an aluminum etch

* 27. (New) The method of claim 12 wherein said etchant source gas includes chlorine.

* 28. (New) The method of claim 13 wherein said plasma processing chamber represents an inductively coupled plasma processing chamber.

* 29. (New) The method of claim 11 wherein said plasma processing chamber represents an inductively coupled plasma processing chamber.

* 30. (New) The method of claim 11 wherein said plasma processing chamber represents a transformer coupled plasma processing chamber.

* 31. (New) The method of claim 11 wherein a lower surface of said semiconductor substrate is in direct contact with a chuck of said plasma processing chamber.

* 32. (New) The method of claim 17 wherein said chuck represents a chuck employing helium cooling.

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(New) The method of claim 11 wherein an inner periphery of said annular sacrificial substrate holder is dimensioned to snugly fit said semiconductor substrate.

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20. (New) The method of claim 11 wherein said etchant source gas is released into said plasma processing chamber by injection via a showerhead, said showerhead having a preferential injection pattern to further improve etch uniformity across said semiconductor substrate.

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21. (New) The method of claim 1 wherein said etchant source gas is released into said plasma processing chamber by injection via a showerhead, said showerhead having a preferential injection pattern to further improve etch uniformity across said semiconductor substrate.